



Product Update Bulletin 2009-1

This product update forwards changes to both software and documentation. The software update is Release 19.1 of CPEXPERT. The release number indicates that it is the first release of 2009.

With Release 19.1, CPEXPERT has been updated to: (1) test CPEXPERT with SAS Release 9.2 to resolve incompatibility issues between SAS 9.2 and earlier versions of SAS, (2) provide additional analysis and features in the WLM Component, the DB2 Component, the CICS Component, and the DASD Component; (3) enhanced the “template” processing of CPEXPERT findings; (4) provide updated documentation on CD; and (5) correct errors that have been reported.

- **Test CPEXPERT with SAS Release 9.2.** All CPEXPERT components have been tested against SAS 9.2 to resolve incompatibility issues between SAS 9.2 and earlier versions of SAS. One annoying incompatibility is that SAS 9.2 produces WARNING notes or ERROR conditions when variables in files are of different lengths or width specifications. These different lengths or widths exist because CPEXPERT dynamically generates code depending on whether an MXG or NeuMICS performance data base is being analyzed. These two products do not always use the same variable length or width for specific SMF values (as examples, MXG uses different variable lengths depending on whether MXG runs on an ebcdic or ascii platform, and MXG might use DATETIME21.2 for a date variable while NeuMICS might use DATETIME19.2 for the same date variable). Earlier versions of SAS either ignored these different lengths or (at most) produced a WARNING from SAS. With SAS 9.2, these different lengths often generate a SAS ERROR, depending on how the SMF variable is used. The SAS VARLENCHK=NOWARN specification turns off the pesky SAS warnings and errors, but that option is not available until SAS 9.2(Phase 2).

- **Updates to the WLM Component.** The following rules and features have been added to the WLM Component:
 - **Added new rules.** The following rules have been added to the WLM Component:
 - Rule WLM093 (*High CPU was experienced in VLF module COFMTRIM*) reports that the VLF module COFMTRIM apparently was looping, with a resulting high CPU time required by the module.

 - Rule WLM094 (*High CPU was experienced in DD consolidation*) reports that apparently DDCONS=YES was specified in the SMFPRMxx member of SYS1.PARMLIB. This is the default specification, but most sites have changed the default to be DDCONS=NO.

- Rule WLM450 (*High CPU used by job steps at enqueue promoted dispatching*) reports that a large amount of CPU time was used by work units executing at high CPU dispatching priority. This dispatching priority was higher than normal for the work units because enqueue promotion had increased the dispatching priority of the work. The CPU service units specified by the ERV keyword in IEAOPTxx controls the amount of CPU time used at enqueue promotion dispatching priority.
- Rule WLM455 (*High CPU used by work with enqueue promoted dispatching*) reports that large amount of CPU time was used by work in service class periods that executed at high CPU dispatching priority. This dispatching priority was higher than normal for the work units because enqueue promotion had increased the dispatching priority of the work. For example, work in a service class period that has a discretionary Performance Goal could execute at the same dispatching priority as Goal Importance 1 work if the discretionary work had been selected for enqueue promotion. The CPU service units specified by the ERV keyword in IEAOPTxx controls the amount of CPU time used at enqueue promotion dispatching priority.
- **Modified rules.** The following WLM Component rules have been modified:
 - Rule WLM042 (*There was a decrease in hardware service units per second*) has been updated to provide information regarding a disparity between documented degradation by the *Hybrid Cooling Cycle Steering* feature and the degradation reported in SMF records. Additionally, the report shows the decrease in processor capacity resulting from the failing cooling unit.
 - Rule WLM210 (*Average Server CPU use per transaction is higher than goal*) now is suppressed if only one transaction was processed on the system being evaluated. This can happen when Execution Phase mode analysis is selected and no transactions go into Execution Phase on the system being analyzed.
 - Rule WLM450 (*Swap-in was a major cause of delay*) and Rule WLM480 (*Target Multiprogramming Level was a major cause of delay*) have been renumbered to Rule WLM420 and Rule WLM425, respectively. This renumbering was done to compress the rule numbers so the WLM400(series) rules can be used for new analysis (e.g., see new Rule WLM450 and Rule WLM455).
 - WLM535 (*Significant zAAP-eligible work executed on a central processor*) has been enhanced to allow reporting of zAAP-eligible work executing on a central processor *when no zAAP is assigned to the LPAR*. This feature allows a user to project the amount of zAAP-eligible work that could be offloaded to a zAAP processor if a zAAP processor were assigned to the LPAR.
 - Rule WLM575 (*Significant zIIP-eligible work executed on a central processor*) has been enhanced to allow reporting of zIIP-eligible work executing on a central processor *when no zIIP is assigned to the LPAR*. This feature allows a user to

project the amount of zIIP-eligible work that could be offloaded to a zIIP processor if a zIIP processor were assigned to the LPAR.

- **New report.** The WLM Component has been enhanced to produce a report that describes *resource owning* and *resource wanting* work units that are related to enqueue promotion. The information includes service classes for owning and wanting work, which makes it easy to identify the relative importance of the work causing enqueue promotion and the work benefitting from enqueue promotion. This report is produced if either Rule WLM450 or Rule WLM455 were produced. The report can be suppressed using the LISTENQS guidance variable in USOURCE(WLMGUIDE).

- **Updates to the DB2 Component.** Changes to the DB2 Component with CPEXpert Release 19.1 include:
 - Rule DB2-224 (*VPSEQT value might be too large*) has been modified by adding an additional guidance variable¹ that allows better user control of the analysis.
 - The default guidance for the Buffer Pool Summary report has been changed to “Y” so the report will be produced by default. This change was made because of very positive feedback from user regarding the benefit of the report.

- **Updates to the CICS Component.** The following rules and features have been added to the CICS Component:
 - **Added new rules.** The following rules² have been added to the CICS Component:
 - Rule CIC180 (*Temporary storage Control Interval size might be too small*) reports that the Temporary Storage Control Interval (CI) size might be too small because a large percent of records written to auxiliary temporary storage had a length greater than the CI size.
 - Rule CIC181 (*Temporary storage Control Interval size might be too large*) reports that the Temporary Storage Control Interval (CI) size might be too large because a very small percent of records written to auxiliary temporary storage had a length greater than the CI size.
 - Rule CIC182 (*Peak temporary storage CIs in use approaching total allocated*) reports that the peak temporary storage Control Intervals (CIs) in use was approaching the total allocated CIs.

¹Thanks to **Glenn Bowman** (Wakefern Food Corporation, NJ) for suggesting this new analysis.

²Thanks to **Robert Winder** (Rabobank, The Netherlands) for suggesting this new analysis.

- Rule CIC183 (*FORMAT writes were required to define secondary extent for TS*) reports that FORMAT writes were required to define secondary extent for auxiliary temporary storage.
- **Modified rule.** The following CICS Component rule has been modified:
 - Rule CIC105 (*Transaction class reached MAXACTIVE too often*) has added a test for the average time on queue being greater than guidance before producing the rule, and the output has been reformatted to show the average time on the queue.
- **Updates to the DASD Component.** Changes to the DASD Component with CPExpert Release 19.1 include:
 - **Added new rules.** The following rules have been added to the DASD Component:
 - Rule DAS501 (*Enqueue activity: total enqueue contention for resource*) reports those Major Resource Names that account for a significant percent of total enqueue time of all resources that experienced resource contention.
 - Rule DAS502 (*Enqueue activity: maximum enqueue time*) reports the top Major Resource Names that experienced the *maximum* enqueue time, and identifies the jobs and service classes causing contention and delayed by the contention.
 - Rule DAS503 (*Enqueue activity: maximum number of enqueue events*) reports the top Major Resource Names that experienced the *maximum* enqueue events, and identifies the jobs and service classes causing contention and delayed by the contention.
 - Rule DAS504 (*Enqueue activity: maximum average enqueue time*) reports the top Major Resource Names that experienced the *maximum average* enqueue events, and identifies the jobs and service classes causing contention and delayed by the contention.
 - Rule DAS505 (*Enqueue activity: maximum multiple enqueue requests waiting*) reports the top Major Resource Names that experienced the maximum multiple enqueue requests waiting, and identifies the jobs and service classes causing contention and delayed by the contention.

Rule DAS501 through Rule DAS505 give different perspectives on resource contention delay. By using the results from these findings, you should be able to select the significant Major Resource Names that were experiencing the most serious contention; and to identify the jobs and service classes causing contention and delayed by the contention.

- **Updates to the WebSphere MQ Component.** Changes to the WebSphere MQ Component with CPExpert Release 19.1 were to correct errors reported by users.

- **Updated documentation on CD.** This release provides all updated documentation to reflect new or revised rules. The CPEXpert documentation is accessible via Adobe Acrobat Reader. A free version of Adobe Acrobat Reader is available at <http://www.adobe.com/products/acrobat/readstep2.html>.
- **Enhanced the “template” processing of CPEXpert findings.** CPEXpert analyzes system performance statistics that are in a performance data base. As a result of the analysis, different “rule findings” are produced. The rule findings are a brief narrative description of the performance problems and associated information describing when the problems occurred. To produce the narrative and associated information, CPEXpert processes rule “templates” that contain the narrative. The templates have “tokens” within the narrative that are used to insert unique information describing the particulars of a finding.

These templates are treated as SAS code, in the sense that they reside in CPEXpert SOURCE along with all CPEXpert analysis modules written in SAS. Since the templates are treated as SAS code, CPEXpert has been constrained by the inherent 72-character restriction on a line length for SAS source code stored in a partitioned data set. This 72-character restriction limited the amount of information that could be displayed on a “line” containing a CPEXpert rule finding.

With this release, the template processing has been enhanced to use a technique that allows a significantly expanded “logical” line length to be available (an ellipsis is used at the end of a line to indicate that the next physical line in the template is a part of the current logical line). With CPEXpert Release 19.1, an arbitrary length of 200 has been selected for the maximum total length of a logical line. This allows much more information to be displayed with a rule finding if more information would be appropriate to the rule.

The purpose of describing this change to the internal design of CPEXpert is to encourage users to send me suggestions if you would like to see additional information associated with any particular CPEXpert rule finding.

- **Add a log of changes to code.** I’ve added a log of changes to the CPEXpert code for Release 19.1. This log is titled CHANGES and shows each module changed (except when the change is minor). Interested users can review the CHANGES log to see what code changes have been made, and can easily identify new guidance variables. I’ve followed the MXG model for releases (that is, the CHANGES log shows changes in the new release, while the CHANGES log is an accumulation of changes). Additionally, I’ve described additions or changes to USOURCE members in the CHANGES log.
- **Add a log of errors reported.** I’ve added a log of all errors reported by users for CPEXpert Release 18.2. This error log is in the GENER182 module in SOURCE.

FTP download

CPEXpert Release 19.1 (both code and documentation) is available via ftp download from my ftp server. If you prefer this method of obtaining the update, please send an email to Don_Deese@cpexpert.com to obtain instructions for ftp download, obtain your user id, and obtain your password. **If you have requested ftp download in past, I will automatically send you the ftp download instructions.**

Installation

I suggest that you use the following steps to install Release 19.1;

- Create a new PDS titled "prefix.CPEXPERT.V191.SOURCE".
- Create a new PDS titled "prefix.CPEXPERT.V191.USOURCE".
- Install CPEXpert into the "prefix.CPEXPERT.V191.SOURCE" using the normal installation procedures described in the *CPEXpert Installation Guide*.
- Install CPEXpert into the "prefix.CPEXPERT.V191.USOURCE" using the normal installation procedures described in the *CPEXpert Installation Guide*. This step will cause the email macros to be loaded into USOURCE.
- Copy your **old** USOURCE members into "prefix.CPEXPERT.V191.USOURCE". This step should be done so you do not have to recreate all of your unique parameters³.
- If you elected to receive updates to CPEXpert on CD, the software is distributed on the CD that contains the CPEXpert user documentation. **This distribution media now is the default distribution.**
 - **Installing CPEXpert from CD to MVS.** Copy the *source.191.ebc* file from `cd:\software\` as binary, to `CPEXPERT.TAPE.REL191`, allocated as `DSORG=PS,RECFM=FB,LRECL=80,BLKSIZE=0,AVGREC=K,SPACE(80,(150,50))`, `DSN=CPEXPERT.REL191.IEBUPDTE`. The *source.191.ebc* file is in standard IEBUPDTE format.

Use the JCL described in Exhibit 2-1 of the *CPEXpert Installation Guide* to install the CPEXpert software. Copy your old USOURCE members as described above.

³The exception to this statement is if you chose to use the "yesterday" option in selecting data. The "yesterday" calculation is done by a PREVIOUS macro contained in USOURCE(GENGUIDE). The PREVIOUS macro is placed in USOURCE so you can select "yesterday" as the immediate previous day, or can define "yesterday" as any other previous day you chose. Placing the PREVIOUS macro in USOURCE(GENGUIDE) allows you to make such a modification, without your altering a SOURCE member. Consequently, if you copy your old USOURCE(GENGUIDE) member to CPEXPERT.V171.USOURCE, you may wish to append the PREVIOUS macro from the Release 16.2 USOURCE into your USOURCE(GENGUIDE) member.

- **Installing CPEXpert from CD to PC:** Copy the cd:\software\source\ on the CD to prefix\cpexpert\rel191\source. Copy the cd:\software\usource\ on the CD to prefix.cpexpert\rel191\usource using the normal installation procedures as described in the *CPEXpert Installation Guide*. This step will cause the email macros to be loaded into usource. Copy your old usource members as described above. Make sure that you update your usource(genguide) member to specify **%LET SOURCE =user_directory;** statement to point to the new SOURCE directory.
- **Downloading via ftp:** If you elected to download updates from my ftp server, you can copy the *source.191.ebc* file to CPEXPRT.TAPE.REL191, allocated as DSORG=PS,RECFM=FB,LRECL=80,BLKSIZE=0,AVGREC=K,SPACE(80,(150,50)), DSN=CPEXPRT.REL191.IEBUPDTE. The *source.191.ebc* file is in standard IEBUPDTE format. The updated CPEXpert user documentation also will be available on the ftp site. It is your option whether you wish to download only the manuals, or also download the individual rule documents. If you wish to download the individual rule documents, they will be available as pdf files in *Individual_Rule_Documentation.zip* on the ftp site.
- If you have implemented the CPEXpert option to produce output to the SAS Output Delivery System (ODS) and if you have exercised the LINKPDF option so you can “click” on a rule in the html output to see the documentation, **please remember to load the new individual rule documentation onto your system.**
- If you chose to implement the xxxHTML option (e.g., WLMHTML) to provide your own SAS ODS HTML statement parameters, please place your own macros into USOURCE and concatenate the USOURCE pds ahead of the SOURCE pds.
- If you chose to implement the CPEXpert email option, please update the xxxEMAIL modules in USOURCE to reflect your unique email features.

Thanks

I would like to say "**Thank you**" to the following individuals. These folks have discovered errors, proposed new features, graciously sent me test data, or suggested documentation changes since the last Update Bulletin:

Glenn Bowman (Wakefern Food Corporation, NJ)
Craig Collins (State of Wisconsin, WI)
John den Os (Rabobank, The Netherlands)
Brian Emanuel (Insurance Services Organization, NJ)
Mary Farrelly (AIG Technologies, NJ)
Yaohua Hu (Insurance Services Organization, NJ)
Barry Merrill (Merrill Consultants, TX)
Bruce Perry (Bell Aliant, Nova Scotia, Canada)
Dennis Pugh (Social Security Administration, MD)
Al Sherkow (I/S Management Strategies, Ltd., WI)

Harald Seifert (HUK-Coburg, Germany)
Meral Temel (Garanti Teknoloji, Turkey)
Bruce Widlund (Merrill Consultants, TX)
Robert Winder (Rabobank, The Netherlands)

Please send me an email if you have suggestions, you want new features, or you would like to see more or different reporting done by CPExpert.

Best regards,

Don Deese

Computer Management Sciences, Inc.

634 Lakeview Drive
Hartfield, Virginia 23071-3113
(804) 776-7109 FAX: (804) 776-7139
www.cpexpert.com
Don_Deese@cpexpert.com